## REMARKS

Claims 1, 2 and 7-26 are pending in the application. Claims 3-6 were previously cancelled. Claims 15-26 were previously added.

The Office Action objects to the abstract of the disclosure as failing to summarize the invention. Applicants amend the abstract to further describe the invention.

Claims 1, 2, 9-15 and 21-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,275,317 to Doerr et al., hereinafter "Doerr", in view of U.S. Patent No. 5,481,629 to Tabuchi, hereinafter "Tabuchi". Claims 1 and 15 are independent. Claims 2 and 9-14 depend from claim 1, and claims 21-26 depend from claim 15. Applicants respectfully traverse this rejection.

Independent claim 1 provides a mounting arrangement for at least one optical component in a planar lightwave circuit. The arrangement includes a substrate, an input optical fiber associated with the substrate, and an output optical waveguide in a given set of planar layers of the substrate, where the at least one optical component is mountable on the substrate to transmit optical radiation from the input optical fiber to the output optical waveguide. The arrangement further includes a length of optical waveguide on the substrate in the same planar layers of the output optical waveguide. The length of optical waveguide is interposed between the input optical fiber and the at least one optical component so that the at least one optical component is interposed between the length of optical waveguide and the output optical waveguide.

Doerr discloses a hybrid integrated optical transmitter 100, as shown in Figures 1 and 2 (col. 4, line 64). Transmitter 100 includes a laser array 105, an optical combiner 110 and an optical amplifier/modulator 115 supported on and affixed to a platform 120 (col. 4, lines 64-67). Optical combiner 110 is fabricated with six input waveguides $W_1$-

$W_6$, combines the wavelengths from each of waveguides $W_1$-$W_6$, and provides a single output $W_O$ (col. 6, lines 20-26). A lensed fiber 125 may be used to couple radiation from amplifier/modulator 115 (col. 5, lines 4-5). Lensed fiber 125 is positioned and aligned using ferrules 130 and 135 (col. 5, lines 5-8). An optical isolator 140 is interposed between optical combiner 110 and optical amplifier/modulator 115 (col. 5, lines 17-18).

The combiner 110 of Doerr, including waveguides $W_1$-$W_6$, represents a single integrated input waveguide. Thus, Doerr does not disclose "a length of optical waveguide on said substrate in the same planar layers of said output optical waveguide, said length of optical waveguide being interposed between said input optical fiber and said at least one optical component," as recited in claim 1.

Tabuchi discloses an integrated optical device that is purportedly capable of easily and precisely position-aligning optical fibers, optical waveguides and optical semiconductor devices (col. 3, lines 35-39). The integrated optical device has a silicon substrate, a planar optical waveguide formed partially on the surface of the silicon substrate, a V groove having a V-shaped cross section for position-aligning an optical fiber so as to optically couple the planar optical waveguide and the optical fiber, an edge input/output type optical semiconductor device bonded on the top surface of said bonding pedestal, and optical axis level changing means for optically coupling the optical waveguide and the optical semiconductor device (col. 3, lines 40-67).

Optical waveguides 20 are formed partially on the surface of a silicon substrate 1 (col. 6, lines 18-19). A V groove 5 is formed on the surface of the silicon substrate, extending in one direction along the optical axis from the a first end of the waveguide 20 which corresponds to a light input/output port (col. 6, lines 27-30). An optical fiber 9 is fitted in, and fixed to, the V groove 5, which provides position alignment between the optical fiber 9 and the optical waveguide 20 (col. 6, lines 30-32).

A spherical lens 10, a rectangular optical member 12, a spherical lens 11, and an optical semiconductor device 8 are disposed in this order along the optical axis from the

other, second end of the waveguide 20 (col. 6, lines 33-36). The active region of the optical semiconductor device 8 is at a position higher than a core region 4 of waveguide 20 (col. 6, lines 41-42).

Tabuchi discloses an optical fiber optically coupled to a planar waveguide, which is coupled to a semiconductor device via optical components. The planar waveguide is located between the optical fiber and an optical component. Claim 1 provides an input optical fiber, an output optical waveguide, and a length of optical waveguide between the input optical fiber and an optical component. In contrast to Tabuchi, claim 1 provides that the length of optical waveguide is on a substrate **in the same planar layers of the output optical waveguide**. Tabuchi does not disclose an output optical waveguide as recited in claim 1. Furthermore, even if the semiconductor device is considered an optical waveguide, the semiconductor device is located above the layer of the planar waveguide, and is thus not in the same planar layers of an output optical waveguide.

Furthermore, in all of the embodiments disclosed in Tabuchi, the semiconductor device is a semiconductor laser, which emits optical radiation. Radiation is coupled from the semiconductor laser to the optical fiber. Therefore, the optical fiber described in the embodiments of Tabuchi is an **output optical fiber**. In contrast, claim 1 provides a waveguide disposed between an **input optical fiber** and an optical component.

Therefore, Tabuchi does not disclose "a length of optical waveguide on said substrate in the same planar layers of said output optical waveguide, said length of optical waveguide being interposed between said input optical fiber and said at least one optical component so that said at least one optical component is interposed between said length of optical waveguide and said output optical waveguide," as recited in claim 1.

Independent claim 15 provides a mounting arrangement for at least one optical component in a planar lightwave circuit. The arrangement includes a substrate, an

input optical fiber associated with the substrate, and an output optical waveguide in a given set of planar layers of the substrate, where the at least one optical component is mountable on the substrate to transmit optical radiation from the input optical fiber to the output optical waveguide. The arrangement further includes a length of optical fiber associated to the substrate between the at least one optical component and the output optical waveguide so that the at least one optical component is interposed between the input optical fiber and the length of optical fiber.

Doerr does not disclose an additional length of fiber that is distinct from fiber 125. Thus Doerr does not disclose "a length of optical fiber associated to said substrate between said at least one optical component and said output optical waveguide so that said at least one optical component is interposed between said input optical fiber and said length of optical fiber" as recited in claim 15.

As discussed above, Tabuchi discloses an optical fiber optically coupled to a **planar waveguide**, which is coupled to a semiconductor device via optical components. Tabuchi nowhere discloses a length of **optical fiber** disposed between an input optical fiber and an output waveguide. In contrast, claim 15 provides a length of optical fiber between an output optical waveguide and an optical component. Therefore, Tabuchi does not disclose "a length of optical fiber associated to said substrate between said at least one optical component and said output optical waveguide so that said at least one optical component is interposed between said input optical fiber and said length of optical fiber," as recited in claim 15.

In addition, there is no suggestion or motivation to combine the disclosures of Doerr and Tabuchi. Doerr and Tabuchi have very different objects. Tabuchi is concerned with manufacturing structures for precisely aligning optical components, such as a V groove for aligning an optical fiber with an planar optical waveguide, whereas Doerr is concerned with reducing optical feedback and uncontrolled wavelength shifts. Furthermore, there is no disclosure in Doerr or in the prior art in general that would suggest the desirability of combining the teachings of Doerr and Tabuchi. Any

suggestion of the desirability of such a combination would be improperly based on the hindsight of Applicants' disclosure. Therefore, there is no motivation to combine Doerr and Tabuchi.

For the reasons discussed above, Tabuchi does not disclose or suggest the elements of either claim 1 or claim 15. Also for the reasons discussed above, there is no motivation to combine the teachings of Doerr and Tabuchi. Therefore, claims 1 and 15 are patentable over the cited combination of Doerr and Tabuchi.

Claims 2 and 9-14 depend from claim 1, and claims 21-26 depend from claim 15. For at least reasoning similar to that provided in support of claims 1 and 15, claims 2, 9-14 and 21-26 are also patentable over the cited combination of Doerr and Tabuchi.

For the reasons set forth above, it is submitted that the rejection of claims 1, 2, 9-15 and 21-26 under 35 U.S.C. 103(a) as unpatentable over Doerr in view of Tabuchi is overcome. Applicants respectfully request that the rejection of claims 1, 2, 9-15 and 21-26 be reconsidered and withdrawn.

Claims 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Doerr in view of Tabuchi, and further in view of U.S. Patent No. 5,611,006 to Tabuchi, hereinafter "Tabuchi-2". Claims 7 and 8 depend from claim 1. Applicants respectfully traverse this rejection.

As discussed above, claim 1 is patentable over the cited combination of Doerr and Tabuchi. Applicants do not believe that Tabuchi-2 makes up for the deficiencies of Doerr and Tabuchi, as they apply to claim 1. Accordingly, Applicants submit that claim 1 is patentable over the cited combination of Doerr, Tabuchi and Tabuchi-2.

Claims 7 and 8 depend from claim 1. For at least reasoning similar to that provided in support of the patentability of claim 1, claims 7 and 8 are patentable over the cited combination of Doerr, Tabuchi and Tabuchi-2. Therefore, it is submitted that

the rejection of claims 7 and 8 as unpatentable over Doerr, Tabuchi and Tabuchi-2 is overcome. Applicants respectfully request that the rejection of claims 7 and 8 be reconsidered and withdrawn.

Claim 19 is rejected under 103(a) as being unpatentable over Doerr in view of Tabuchi, and further in view of U.S. Patent No. 5,999,303 to Drake, hereinafter "Drake". Claim 19 depends from claim 15. Applicants respectfully traverse this rejection.

As discussed above, claim 15 is patentable over the cited combination of Doerr and Tabuchi. Applicants do not believe that Drake makes up for the deficiencies of Doerr and Tabuchi, as they apply to claim 15. Accordingly, Applicants submit that claim 15 is patentable over the cited combination of Doerr, Tabuchi and Drake.

Claim 19 depends from claim 15. For at least reasoning similar to that provided in support of the patentability of claim 15, claim 19 is patentable over the cited combination of Doerr, Tabuchi and Drake. Therefore, it is submitted that the rejection of claim 19 as unpatentable over Doerr, Tabuchi and Drake is overcome. Applicants respectfully request that the rejection of claim 19 be reconsidered and withdrawn.

Claim 20 is rejected under 103(a) as being unpatentable over Doerr in view of Tabuchi. Claim 20 depends from claim 15. Applicants respectfully traverse this rejection.

As discussed above, claim 15 is patentable over the cited combination of Doerr and Tabuchi. Claim 20 depends from claim 15. For at least reasoning similar to that provided in support of claim 15, claim 20 is patentable over the cited combination of Doerr and Tabuchi. Applicants respectfully request that the rejection of claim 20 be reconsidered and withdrawn.

An indication of the allowability of all pending claims by issuance of a Notice of Allowability is earnestly solicited.

Respectfully submitted,

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